**Teacher: Ms. Turner**  
**Office Location: EDU 200**  
**Office Hours: MWF 12:00-2:30pm**  
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**Summary of Unit**

This unit will uncover quadratic equations. The different types of quadratic equations, how to solve them, graph them, and apply them. It will cover the quadratic equation, factoring, and completing the square. How to graph these equations and how they apply directly to the real world. Complex numbers will be introduced and discussed at length. By the end of the unit we will have covered how to solve all types of quadratics, be able to graph them and apply them to real world situations.

**Establish Goals**

**Common Core State Standards**  
**Content Area**: Algebra  
**Grade Level**: High school  
**Domain**: Reasoning with Equations and Inequalities  
**Cluster**: Solve equations and inequalities in one variable  
**Standard** 4: Solve quadratic equations and in one variable.  
b: Solve quadratic equations by inspection (e.g., for x^2=49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a+-bi for real numbers a and b.

**Students will understand that**

• there are multiple was to solve a quadratic equation for an unknown variable.  
• the quadratic equation can be applied in the real world.  
• the quadratic equation can give complex numbers.

**Essential Questions**

• how can a quadratic be solved for an unknown?  
• how does the quadratic equation apply to the real world?  
• why does the quadratic formula sometimes result in complex numbers

**Students will know**

• terminology: equation, variable, coefficient, constant, distribute, complex number,  
imaginary number, roots, parabola, quadratic, factoring.  
• formulas: ax^2+bx+c, quadratic formula, order of operations.  
• real life experience: ball trajectory, distance, time, height, length.

**Students will be able to**

• derive a complex number from the quadratic equation.  
• represent a complex number in an equation.  
• solve a quadratic equation.  
• analyze a quadratic in a real life situation.  
• consider that a quadratic equation applies to the real world.  
• be aware of the multiple ways to solve a quadratic equation  
  
  
**Performance Task Overview**   
The Shopping Channel is looking for new products to showcase on air. They want a product that is going to sell and is going to make them the most money possible. Your task is to create the next best product out there to get air time on the network. The key to getting the most on air time is getting the maximum profit for your product. So develop a product, it can be an invention, an art piece, an improvement on an existing product, or some other idea you come up with. Calculate the cost of making your product, and what you should set the price of one unit at to maximize your profit. Then create a 3-5 minute imovie showcasing your product and how you plan on maximizing your profit. Really try to promote your product so that you get the air time you deserve!

**Expectations**

**Absences:**  
Sometimes things happen that will cause students to miss class. If students are absent from class it is there responsibility to communicate with the teacher and get all work they have missed. Students will check the teacher’s website for what was discussed in class, homework assignments, and to any links that can help the student understand the material. The teacher will also place any handouts that were given in class in a specified folder with the student’s name on each hand out they have missed. It is the student’s responsibility to talk to the teacher about when homework that was due the day the student was absent will be turned in. The teacher will allow for flexible due dates for these students as long as the student takes the initiative to discuss the due date with the teacher.

**Plagiarism:**  
Per school guidelines, and the law, plagiarism is not acceptable at any time. The teacher will ensure that all students have proper knowledge of plagiarism and how to cite resources properly. Any additional questions about citing or plagiarism should be brought to the teacher’s attention. The teacher will work with any student that unintentionally plagiarizes. However any student found to be intentionally plagiarizing will be subject to the punishment set forth by school policy.  
  
**Assignments:**  
All assignments will have formal guidelines and due dates. However the teacher will work with any student on assignment due dates. If a student needs to change a due date due to an extenuating circumstance, the student must communicate with the teacher prior to the due date. The student must explain why a change to the due date is being requester, what the new due date will be and how the student plans on getting the assignment done in that time. If a student does not communicate with the teacher on a changing a deadline, any late work will receive a point deduction.

**Classroom Expectations**:  
The teacher expects that all students will bring required material to each class. If for any reason a student does not have required material the student should speak to the teacher before class starts so the student can be successful in class. Students need to have respect for themselves, others, and property. Students need to take ownership for themselves and be respectful at all times. Students also need to bring a willingness to learn to each class. Even if the class is not the student’s favorite they need to be open to learning and bring a willingness to expand their minds.

**Benchmarks (450 points)**

**•** **Slide show (70 points)** Students will use a slide show to show how different quadratic equations result in different answers. Students will need to include equations that result in both real and complex solutions. Student will need to be sure to give a brief description of complex numbers and how they are represented in equations.   
**OR**  
**•** **Podcast (70 Points)** Students will create a podcast to explain what a complex number is and how they are represented in an equation. Students must explain why and how a complex number may be derived and what it means to have a solution that is a complex number. 

**•** **Google Docs (50 Points)** Students will create a google doc and create three quadratic equations. Students will share this document with the class and give each classmate the ability to edit the document. Each student will be responsible for solving one equation from three different students. They will put only their answers on the corresponding google doc. Students will also bring the work they did to get the answer into class to turn into the teacher.

**•** **Online photo album (100 Points)** Students will create a photo album that shows pictures of real life situations where the quadratic equation could be used. Students must compile the pictures into a photo album and upload the album online and have it shared.   
**OR**  
**• Imovie (100 Points)** Students will create an imovie demonstrating real life applications of quadratics. Students will need to record real life situations where a quadratic equation could be applied. Students will compile these videos into an imovie to show the different scenarios. 

**• Prezi (80 Points)** Student will use Prezi to show the multiple ways to solve a quadratic. Students must be sure that they showcase all ways to solve a quadratic, and give reasons why in some instances one method of solving a quadratic equation would be better than another.   
  
**Performance task (150 points)** see above

**Grading Scale**

**A** (93 -100), **A-** (90 - 92), **B+** (87 - 89), **B** (83 - 86), **B-** (80 - 82), **C+**(77 - 79), **C** (73-76), **C-** (70 - 72), **D+**(67 - 69), **D** (63 - 66), **D-** (60 - 62), **F** (0 - 59)